

A KEY TO THE SPECIES, VARIETIES, AND FORMS OF THE ALGAL GENUS *OEDOGONIUM**.

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Although the writer has in an advance state of preparation a complete monographic report of the algal genus *Oedogonium*, it seems appropriate to present at this time a key to all forms known, together with a few notes on some recent changes and additions to the taxonomic nomenclature of the genus. It is candidly admitted at the outset that any key not illustrated is well-nigh "an abomination unto science." It is equally true, on the other hand, that an attempt to include all the species, varieties, and forms of a genus as large as *Oedogonium* into a workable key is not without its difficulties. A very earnest effort has been made to examine all the literature pertinent to the subject. In all probability some species have been omitted. The writer will appreciate very much having his attention called to any members of the genus not included herewith. In fact, any correction or suggestion regarding the key and its workability will be most welcome; thus, a preliminary report seems desirable.

The key has been made with the deliberate aim of helping the student of the genus to name his collection. Morphological relationships have been severed whenever it was felt that the alga could be identified more readily in another association. The key has been considerably revised since its first draft nearly six years ago, and the writer is grateful to his students and colleagues for their constructive criticisms. If the name of the alga is followed by an asterisk, it signifies that the description is incomplete and hence the position in the key only a probability.

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THE KEY.

1. Vegetative cell undulate or nodulose..... 2
1. Vegetative cell punctate or granulate..... 6
1. Vegetative cell distinctly capitellate..... 7
1. Vegetative cell cylindrical..... 35
1. Vegetative cell subhexagonal or subellipsoid..... *Oe. reinschii** 3
2. Without dwarf male..... 4
2. With dwarf male..... 4
3. Diameter of oogonium 18–23 μ *Oe. sphaerandrium*
3. Diameter of oogonium 48–57 μ *Oe. nodulosum*
3. Diameter of oogonium 64–74 μ *Oe. nodulosum* var. *commune* 5
4. Diameter of oogonium 44–56 μ 5
4. Diameter of oogonium 58–68 μ *Oe. undulatum* var. *americanum*
5. Dwarf male 36–46 μ in length..... *Oe. undulatum* f. *senegalense*
5. Dwarf male 48–70 μ in length..... *Oe. undulatum*
6. Diameter of vegetative cell 6–8 μ *Oe. elegans*
6. Diameter of vegetative cell 9–13 μ *Oe. minus*
6. Diameter of vegetative cell 16–22 μ *Oe. punctatostriatum*
7. Without dwarf male..... 8
7. With dwarf male..... 17
7. Reproductive structures imperfectly known..... 34
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8. Monoecious..... 11
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9. Division of oogonium inferior..... *Oe. inversum*
9. Division of oogonium median..... 10
10. Oogonium 26–29 μ in diameter..... *Oe. howardii* var. *minus*
10. Oogonium 29–32 μ in diameter..... *Oe. howardii*
10. Oogonium 32–36 μ in diameter..... *Oe. latiusculum*
11. Oogonium opening by a pore..... *Oe. hirnii* var. *africanum*
11. Oogonium opening by a lid..... 12
12. Diameter of oogonium 15–25 μ 13
12. Diameter of oogonium 34–46 μ 16
13. Division of oogonium median..... 14
13. Division of oogonium supramedian..... 15
14. Oogonium subdepressed-globose..... *Oe. capitellatum*
14. Oogonium angular-globose..... *Oe. quadratum*
15. Diameter of oogonium 15–20 μ *Oe. virceburgense**
15. Diameter of oogonium 18–23 μ *Oe. sphaerandrium*
15. Diameter of oogonium 26–29 μ *Oe. spurium**
16. Vegetative cell punctate..... *Oe. minus*
16. Vegetative cell not punctate..... *Oe. bohemicum*
17. Poriferous..... *Oe. nebraskense*
17. Operculate..... 18
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18. Division of oogonium supramedian..... 24
18. Division of oogonium inframedian..... 26
18. Division of oogonium superior..... *Oe. rigidum*
18. Division of oogonium supreme..... 29
19. Division of oogonium narrow..... 20
19. Division of oogonium wide..... 21
20. Oogonium 28–35 \times 23–38 μ *Oe. decipiens* f. *dissimile*
20. Oogonium 46–54 \times 44–54 μ *Oe. bengalense*
20. Oogonium 57–64 \times 48–53 μ *Oe. indicum*
21. Diameter of oospore 22–26 μ 22
21. Diameter of oospore 30–32 μ *Oe. areschougii* f. *robustum*
21. Diameter of oospore 42–48 μ 23
21. Diameter of oospore 48–53 μ *Oe. brasiliense*
22. Gynandrosporous..... *Oe. areschougii*
22. Idioandrosporous..... *Oe. areschougii* var. *americanum*
23. Vegetative cell 14–19 μ in diameter..... *Oe. bengalense*
23. Vegetative cell 19–26 μ in diameter..... *Oe. confertum*

24.	Diameter of oogonium 14-26 μ	<i>Oe. clavatum</i>	25
24.	Diameter of oogonium 27-42 μ	<i>Oe. costatum</i>	
24.	Diameter of oogonium 50-55 μ	<i>Oe. boreale</i>	
24.	Diameter of oogonium 58-65 μ	<i>Oe. oelandicum</i> f. <i>minus</i>	
25.	Oogonium 19-25 μ in length.....	<i>Oe. oelandicum</i>	
25.	Oogonium 25-32 μ in length.....	<i>Oe. megaporum</i>	
25.	Oogonium 40-45 μ in length.....	<i>Or. platygynum</i> var. <i>continuum</i>	
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26.	Suffultory cell not enlarged.....	<i>Oe. platygynum</i> var. <i>novæzelandiæ</i>	28
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29.	Oospore wall longitudinally ribbed.....	<i>Oe. supremum</i>	
30.	Idioandrosporous.....	<i>Oe. wabashense</i>	33
30.	Gynandrosporous.....	<i>Oe. obtruncatum</i> var. <i>completum</i>	
31.	Oogonium 48-60 \times 62-74 μ	<i>Oe. obtruncatum</i>	
31.	Oogonium 66-78 \times 72-90 μ	<i>Oe. obtruncatum</i> var. <i>ellipsoideum</i>	
32.	Diameter of oogonium 36-42 μ	<i>Oe. fusus</i> *	
32.	Diameter of oogonium 42-55 μ	<i>Oe. virceburgence</i> *	
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39.	Wall of oospore scrobiculate.....		45
39.	Wall of oospore echinate.....		47
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40.	Dioecious.....		46
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41.	Diameter of oogonium 32-38 μ	<i>Oe. laeve</i>	
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48.	Oospore 33-38 \times 28-32 μ	<i>Oe. inerme</i> *	
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50.	Diameter of vegetative cell 9-14 μ	<i>Oe. suecicum</i>	
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NOTES ON NEW FORMS.

In analyzing the members of the genus *Oedogonium* it seems necessary in the interest of completeness and simplicity to recognize the new forms and combinations described below. Insofar as the notes of the writer are complete, this brings the genus up to date.

Oe. borisianum (Le Cl.) Wittr. var. *westii* Tiffany & Brown, nov. var.

Oe. Borisianum (Le Cl.) Wittr. in West and West, 1903, p. 36.

Larger dimensions throughout; vegetative cell $17-19 \times 130-180\mu$; suffultory cell $31-42 \times 105-168\mu$; oogonium $53-60 \times 67-88\mu$; oospore $49-58 \times 49-58\mu$; antheridium $17 \times 12-13\mu$.

England; Mississippi (U. S. A.)

Oe. decipiens Wittr. var. *africanum* nov. var.

Oe. decipiens forma West and West, 1897, p. 5; Hirn, 1900, p. 267, Pl. XLVI, Fig. 284.

A little smaller than the type and idioandrosporous; vegetative cell $8-13 \times 25-60\mu$; oogonium $25-32 \times 24-32\mu$; oospore $24-30 \times 23-28\mu$; androsporangium $7-11 \times 9-13\mu$; dwarf male $6-7 \times 9-12\mu$.

Africa.

Oe. dictyosporum Wittr. f. *westii* nov. f.

Oe. dictyosporum Wittr. forma West, 1907, p. 98.

Oogonium and oospore ovate-ellipsoid, a little larger than the type; vegetative cell $14-16 \times 50-80\mu$; oogonium $42 \times 52\mu$; oospore $40 \times 50\mu$; antheridium $13 \times 8-9\mu$.

Africa.

Oe. hystrix Wittr. var. *canadense* nov. var.

(?) *Oe. hystrix* Wittr. in Skuja, 1927, Pl. II, Fig. 13.

Pore inframedian; vegetative cell $14-25 \times 80-125\mu$; suffultory cell $24-30 \times 64-72\mu$; oogonium $40-53 \times 52-64\mu$; oospore $38-48 \times 40-60\mu$; androsporangium $16-20 \times 15-30\mu$; antheridium $7-8 \times 8-14\mu$; dwarf male stipe $9-12 \times 28-40\mu$.

All of the individual plants of *Oe. hystrix* that I have seen had the median pore as a very constant characteristic. In material sent me by Mr. G. H. Wailes from British Columbia occurred a form along with the type, having the pore uniformly below the median position. This together with differences in size seems to warrant a new variety. The form figured by Skuja very probably should be referred to this variety, although the dimensions are not quite the same.

British Columbia; (?) Latvia.

Oe. intermedium Wittr. var. *fennicum* nov. var.

Oe. intermedium Wittr. forma valida Hirn, 1900, p. 95, Pl. V, Fig. 32;

Oe. intermedium Wittr. forma West, 1909, p. 239.

Oogonium and oospore considerably larger; vegetative cell $17-19 \times 50-120\mu$; oogonium $38-46 \times 42-60\mu$; oospore $35-40 \times 35-40\mu$; antheridium $13-18 \times 6-8\mu$.

Finland; Egypt; Michigan (U. S. A.).

Oe. macrandrium Wittr. var. *hohenackerii* (Wittr.) nov. comb.

Oe. Hohenackerii Wittrock, 1874, p. 23; *Oe. tumidulum* in *Hohenacker Alg.*

Exs. No. 404; *Oe. Hohenackerii* Wittr. in Hirn, 1900, p. 238,

Pl. XL, Fig. 246.

Vegetative cell $12-15 \times 24-45\mu$; oogonium $29-33 \times 30-35\mu$; oospore $27-31 \times 28-31\mu$; androsporangium $11-13 \times 10-14\mu$; dwarf male stipe $9-14 \times 18-24\mu$; antheridium $5-6 \times 5-8\mu$.

A collection of this interesting member of the genus from Michigan by Miss Alma B. Ackley helped to establish definitely that it belongs with the *macrandrium* group. Its shorter vegetative cells constitute its chief distinctive characteristic, but it seems to occur regularly.

India; Massachusetts and Michigan (U. S. A.).

Oe. rufescens Wittr. var. *lundellii* (Wittr.) nov. comb.

This variety was originally described by Wittrock (1872, p. 32) as *Oe. Lundellii*. It is considered as a subspecies of *Oe. rufescens* by Hirn (1900, p. 77, Pl. I, Fig. 6). It clearly belongs with *rufescens*, but I can see no necessity of maintaining the division "subspecies" in the nomenclature of the genus. Its dimensions are very near those of the species proper, but its slightly wider vegetative cells in proportion to oogonia and the depressed-globose appearance of the oogonia, which are quite constant, perhaps warrant a varietal rank.

Oe. spirale Hirn var. *latviense* nov. var.

Oe. spirale Hirn f. in Skuja, 1927, p. 102, Pl. II, Fig. 14, a, b.

Pore supramedian or superior; vegetative cell $16-20 \times 65-120\mu$; oogonium $49-60 \times 65\mu$; oospore (without ribs) $35-45 \times 35-45\mu$, not filling oogonium, outer wall with 5 to 6 spirally arranged ribs; dwarf male $12 \times 50\mu$.

The above description of the alga, as given by Skuja for the Latvian material, seems to warrant varietal rank.

Latvia.

Oe. capilliforme Kuetz.; Wittr. var. *diversum* (Hirn) nov. comb.

Oe. capilliforme Kuetz.; Wittr. var. *australe* Wittr. f. *diversum*, Hirn, 1900, p. 110, Pl. IX, Fig. 54; *Oe. stagnale* Kuetz. in Tilden Amer. Algæ, 1896.

Dimensions larger throughout; female vegetative cell $34-46 \times 45-130\mu$; male vegetative cell $33-40 \times 50-120\mu$; oogonium $46-56 \times 46-70\mu$; oospore $43-52 \times 40-58\mu$; antheridium $30-37 \times 6-11\mu$.

U. S. A.: Colorado, Iowa.

ALPHABETICAL LIST OF SPECIES, VARIETIES,
AND FORMS.

The following is a complete list of all members of *Oedogonium* thought to have a tenable position in the genus. A few species with very incomplete and unsatisfactory descriptions are not included. They will be discussed in the monographic report.

In working through a genus as large as *Oedogonium*, one finds it quite difficult to pass on the validity of some members. Such decisions, while always influenced to some extent by personal interpretations, must rest upon one's knowledge of all species and their variations.

The ultimate criterion must be the constancy of such characteristics as methods of reproduction, size (within limits), shape of cells, opening of oogonia, etc. How much are all these altered by ecological conditions of the body of water in which the algæ are growing? Unfortunately our data here are far from complete. When one finds a combination of the same characteristics in a given alga year after year in various habitats, one can be reasonably sure of the constancy of the species.

If an alga occurs year after year in the same habitat with a known species, differing in one or more morphological characteristics but evidently closely related to the type, it should be classed as a "variety." As an example, the robust variety (*majus*) of *Oe. grande* has been collected with the type in nearly all collections from the United States. Such differences can hardly be accounted for on the basis of environmental influences.

The category "form" ("forma" of Hirn) should be regarded as a temporary disposition only. If an alga varies from the description of a given species and has been seen only once or twice, it is hardly possible to know whether the variation is constant or merely an ecological variation. If the form occurs with the type and is found on several occasions to maintain its morphological variation, it should be raised to varietal rank. A "form" then should be retained only when the data are insufficient to pass on the constancy of the variations noted in the description.

The following list is based on the above interpretation.

1. *acmandrium* Elfv.
2. *acrosporum* De Bary.
3. " f. *boreale* (Wolle) Hirn.
4. " var. *bathmidosporum* (Nord.) Hirn.
5. *acrosporum* var. *floridense* Wolle.
6. " var. *majusculum* Nordst.
7. *ahlstrandii* Wittr.
8. *alternans* Wittr. & Lund.
9. *americanum* Transeau.
10. *angustissimum* West & West.
11. *anomalum* Hirn.
12. *arcyosporum* Nor. & Hirn.
13. *areolatum* Lagerheim.
14. *areschougii* Wittr.
15. " var. *americanum* Tiffany
16. " f. *robustum* Hirn.
17. *argenteum* Hirn.
18. *armigerum* Hirn.
19. *aster* Wittr.
20. *australianum* Hirn.
21. *autumnale* Wittr.
22. *bahusiense* Nordst.
23. *bengalense* Hirn.
24. *biforme* Nordst.
25. *bohemicum* Hirn.
26. *boreale* Hirn.
27. *borisianum* (Le Cl.) Wittr.
28. " var. *westii* Tiffany & Brown.
29. *boscii* (Le Cl.) Wittr.
30. *boscii* (Le Cl.) Wittr. f. *dispar* Hirn.
31. " var. *notabile* Lemm.
32. " var. *occidentale* Hirn.
33. *brasiliense* Borge.
34. *braunii* Kuetz.; Pringsh.
35. " var. *hafniense* (Hallas) Hirn.
36. " var. *zehneri* Tiffany.
37. *calcareum* Cleve.
38. *capense* Nordst. & Hirn.
39. *capillare* (L.) Kuetz.
40. " f. *stagnale* (Ktz.; Wittr.) Hirn.
41. *capilliforme* Kuetz.; Wittr.
42. " f. *debaryanum* (Chmiel.) Hirn.
43. *capilliforme* f. *lorentzii* (M. & W.) Hirn.
44. *capilliforme* var. *australe* Wittr.
45. " var. *diversum* (Hirn) Tiffany.
46. *capitellatum* Wittr.
47. *cardiacum* (Hass.) Wittr.
48. " f. *interjectum* Hirn.
49. " f. *pulchellum* (Hass.) Hirn.
50. " var. *carbonicum* Wittr.
51. " var. *minor* Lemm.
52. *cataractum* Wolle.
53. *ciliatum* (Hass.) Pringsh.
54. *clavatum* Hallas.
55. *cleveanum* Wittr.
56. " f. *exoticum* Hirn.
57. *concatenatum* (Hass.) Wittr.
58. *concatenatum* f. *hutchinsiae* (Wittr.) Hirn.
59. *concatenatum* var. *rectangulare* Rich.
60. *confertum* Hirn.
61. *consociatum* Collins & Hervey.
62. *contortum* Hallas.
63. *costatum* Transeau, Mss.
64. *crassiusculum* Wittr.
65. " var. *arechavaletæ* (Wittr.) Hirn.
66. *crassiusculum* var. *idioandrosporum* Nor. & Wtr.
67. *crassum* (Hass.) Wittr.
68. " f. *amplum* (Magnus & Wille) Hirn.
69. *crassum* var. *longum* Transeau.
70. " var. *subtimum* Hirn.
71. *crenulatocostatum* Wittr.
72. " f. *cylindricum* Hirn.
73. *crenulatocostatum* var. *aureum* Tilden.
74. *crenulatocostatum* var. *longiarticulatum* Hansg.
75. *crenulatum* Wittr.
76. " var. *gracilius* (Nordst.) Hirn.
77. *crispum* (Hass.) Wittr.
78. " f. *granulosum* (Nordst.) Hirn.
79. *crispum* f. *inflatum* Hirn.
80. " var. *gracilescens* Wittr.
81. " var. *hawaiense* Nordst.
82. " var. *uruguayense* Magnus & Wille.
83. *cryptosporum* Wittr.
84. " var. *vulgare* Wittr.
85. *curtum* Wittr. & Lund.
86. *curvum* Pringsheim.
87. *cyathigerum* Wittr.
88. " f. *americanum* Wolle.
89. " f. *ornatum* (Wittr.) Hirn.
90. *cyathigerum* f. *perfectum* Hirn.
91. " var. *ellipticum* M. & W.
92. " var. *hormosporum* (West) Hirn.
93. *cymatosporum* Wittr. & Nordst.
94. *danicum* Hallas.
95. *decipiens* Wittr.
96. " f. *dissimile* Hirn.
97. " var. *africanum* Tiffany.
98. " var. *bernardense* (Bates) Hirn.
99. *depressum* Pringsh.
100. *dictyosporum* Wittr.
101. " f. *westii* Tiffany.
102. *dioicum* Carter.
103. *donnellii* Wolle; Hirn.
104. " var. *wittrockiana* Hirn.
105. *echinatum* (Wood) Wittr.
106. *echinospermum* Al. Br.
107. " var. *horridum* Hirn.

108. *elegans* West & West.
109. *excisum* Wittr. & Lund.
110. *exocostatum* Tiffany.
111. *exospirale* Tiffany.
112. *fabulosum* Hirn.
113. " var. *maximum* (West)
Hirn.
114. *fabulosum* var. *punctatum* Lemm.
115. *flavescens* (Hass.) Wittr.
116. *flexuosum* Hirn.
117. *fonticola* Al. Braun.
118. *foveolatum* Wittr.
119. *fragile* Wittr.
120. " var. *abyssinicum* Hirn.
121. *franklinianum* Wittr.
122. *fusus* Hallas.
123. *gallicum* Hirn.
124. *geniculatum* Hirn.
125. *giganteum* Kuetz.; Wittr.
126. *glabrum* Hallas.
127. *globosum* Nordst.
128. *gracillimum* Wittr. & Lund.
129. " f. *majus* West & West.
130. *grande* Kuetz.; Wittr.
131. " f. *gemelliparum* (Pring.) Hirn.
132. " var. *aequatoriale* Wittr.
133. " var. *angustum* Hirn.
134. " var. *majus* Hansg.
135. *gunnii* Wittr.
136. *hians* Norst. & Hirn.
137. *hirsii* Gutwinski.
138. " var. *africanum* G. S. West.
139. *hispidum* Nordst.
140. *hoeheii* Borge.
141. *hoerscholmiense* Hallas.
142. *howardii* G. S. West.
143. " var. *minus* Tiffany.
144. *hunii* Wood.
145. *hystricinum* Transeau & Tiffany.
146. *hystrix* Wittr.
147. " var. *canadense* Tiffany.
148. " var. *subglobosum* Wittr.
149. *illinoiense* Transeau.
150. *implexum* Hirn.
151. *inconspicuum* Hirn.
152. *indicum* Hirn.
153. *inermis* Hirn.
154. " var. *mentiens* Hirn.
155. *infimum* Tiffany.
156. *inflatum* Hallas.
157. *insigne* Hirn.
158. *intermedium* Wittr.
159. " var. *fennicum* Tiffany.
160. *inversum* Wittr.
161. *iowense* Tiffany.
162. *irregularis* Wittr.
163. " var. *condensatum* (Hallas)
Hirn.
164. *itzigsohnii* De Bary.
165. " f. *heteromorphum* Hirn.
166. " var. *minus* West.
167. *kirchneri* Wittr.
168. *kiitua* G. S. West.
169. *kjellmanii* Wittr.; Hirn.
170. *kurzii* Zeller.
171. *laetevirens* Wittr.
172. *laeve* Wittr.
173. *lageniforme* Hirn.
174. *lagerstedtii* Wittr.
175. *landsboroughi* (Hass.) Wittr.
176. " var. *norvegicum*
Wittr.
177. *latiusculum* Tiffany.
178. *lautumiarum* Wittr.
179. *leiopleurum* Nordst. & Hirn.
180. *lindmanianum* Wittr.
181. *longatum* Kuetz.
182. *longicolle* Nordst.; Hirn.
183. " var. *senegalense* Nordst.
184. *loricatum* Hirn.
185. *macrandrium* Wittr.
186. " f. *acuminatum* Hirn.
187. " f. *aemulans* Hirn.
188. " f. *lundense* (Wittr.)
Hirn.
189. *macrandrium* var. *propinquum*
(Wittr.) Hirn.
190. *macrandrium* var. *hohenackerii*
(Wittr.) Tiffany.
191. *macrandrium* var. *scrobiculatum*
Ackley, Mss.
192. *macrospermum* West & West.
193. *magnusii* Wittr.
194. *mammiferum* Wittr.; Nordst.
195. *manschuricum* Skvortzow.
196. *margaritifera* Nordst. & Hirn.
197. *martinicense* Hirn.
198. *megaporum* Wittr.; Hirn.
199. *mexicanum* Wittr.
200. *michiganense* Tiffany.
201. *minus* Wittr.
202. *mirandrium* Skuja.
203. *mitratum* Hirn.
204. *monile* Berk. & Harv.; Wittr.
205. " f. *borgei* Hirn.
206. " var. *eminens* Hirn.
207. " f. *victoriense* G. S. West.
208. *moniliforme* Wittr.
209. *montagnei* Fiorini-Mazzanti; Wittr.
210. *multisporum* Wood.
211. " var. *magnum* Ackley,
Mss.
212. *nanum* Wittr.; Tiffany.
213. *nebraskense* Ohashi.
214. *nobile* Wittr.
215. " var. *minus* Hirn.
216. *nodulosum* Wittr.
217. " var. *commune* Hirn.
218. *obesum* (Wittr.) Hirn.
219. *oblongellum* Kirch.
220. *oblongum* Wittr.
221. " f. *majus* (Nordst.) Hirn.
222. " f. *sphaericum* (Hallas)
Hirn.
223. *oboviforme* Wittr.
224. *obsoletum* Wittr.

225. *obtruncatum* Wittr.
 226. " var. *completum* Hirn.
 227. " var. *ellipsoideum* Wittr.
 228. *oelandicum* Wittr.
 229. " f. *minus* Borge.
 230. *oryza* Wittr.
 231. " var. *seriosporum* (Lager.) Hirn.
 232. *oviforme* (Lewin) Hirn.
 233. *pachyandrium* Wittr.
 234. *pachydermum* Wittr. & Lund.
 235. *paludosum* (Hass.) Wittr.
 236. " var. *americanum* Nordst.
 237. " var. *parvisporum* Hirn.
 238. *paucocostatum* Transeau.
 239. " var. *gracilis* Tiff.
 240. *paulense* Nordst. & Hirn.
 241. *perspicuum* Hirn.
 242. *petri* Wittr.
 243. *pisanum* Wittr.
 244. " var. *gracilis* Trans. & Tiff.
 245. *pithophora* Wittr.
 246. *plagiostomum* Wittr.
 247. " var. *gracilius* Wittr.
 248. *platygynum* Wittr.
 249. " f. *obtusum* Hirn.
 250. " var. *continuum* Nordst.
 251. " var. *novae zelandiae* Hirn.
 252. *plicatum* Wittr.
 253. *plusiosporum* Wittr.
 254. *pluviale* Nordst.
 255. *poecilosporum* Nordst. & Hirn.
 256. *porrectum* Nordst. & Hirn.
 257. *pratense* Transeau.
 258. *praticolum* Transeau.
 259. *princeps* (Hass.) Wittr.
 260. *pringsheimii* Cramer; Wittr.
 261. " var. *abbreviatum* Hirn.
 262. *pringsheimii* var. *nordstedtii* Wittr.
 263. *psaegmatosporum* Nordst.
 264. *pseudacrosporum* Wittr.
 265. *pseudoboscii* Hirn.
 266. *pulchrum* Nordst. & Hirn.
 267. *punctatostriatum* De Bary.
 268. *punctatum* Wittr.
 269. *pungens* Hirn.
 270. *pusillum* Kirchner.
 271. *pyriforme* Wittr.
 272. *pyrulum* Wittr.
 273. *quadratum* Hallas.
 274. *reinschii* Roy.
 275. *rhodosporum* (Welwitsch) Wittr.
 276. *richterianum* Lemm.
 277. *rigidum* Hirn.
 278. *rivulare* (Le Cl.) Al. Br.
 279. *rothii* (Le Cl.) Pringsheim.
 280. *rufescens* Wittr.
 281. " f. *exiguum* (Elfvig) Hirn.
 282. " var. *lundellii* (Wittr.) Tiff.
 283. *rugulosum* Nordst.
 284. " f. *minutum* (Hansg.), Hirn.
 285. *rugulosum* f. *rotundatum* Hirn.
 286. *rupestre* Hirn.
 287. " f. *pseudautumnale* Hirn.
 288. *sancti thomae* Wittr. & Cleve.
 289. *schmidlei* Gutwinski.
 290. *scrobiculatum* Wittr.
 291. *selandiae* Hallas.
 292. *semiapertum* Nordst. & Hirn.
 293. *sexangulare* Cleve.
 294. " var. *angulosum* (Hallas) Hirn.
 295. *sexangulave* var. *majus* Wille.
 296. *silvaticum* Hallas.
 297. *simplex* Hirn.
 298. *sociale* Wittr.
 299. *sodiroanum* Lagerheim.
 300. *sol* Hirn.
 301. *spectabile* Hirn.
 302. *sphaerandrium* Wittr. & Lund.
 303. *spirale* Hirn.
 304. " var. *acutum* G. S. West.
 305. " var. *latviense* Tiffany.
 306. *spurium* Hirn.
 307. *stellatum* Wittr.
 308. *suboctangulare* G. S. West.
 309. *subrectum* Hirn.
 310. *suecicum* Wittr.
 311. " f. *australe* G. S. West.
 312. *supremum* Tiffany.
 313. *tapeinosporum* Wittr.
 314. *taphrosporum* Nordst. & Hirn.
 315. *tentoriale* Nordst. & Hirn.
 316. *tiffanii* Ackley, Mss.
 317. *trioicum* Woronichkin.
 318. *tumidulum* (Kuetz.) Wittr.
 319. *tyrolicum* Wittr.
 320. *uleanum* Hirn.
 321. *undulatum* (Breb.) Al. Br.; Wittr.
 322. " var. *americanum* Transeau.
 323. *undulatum* f. *senegalense* (Nordst.) Hirn.
 324. *upsaliense* Wittr.
 325. " var. *fennicum* Hirn.
 326. *urbicum* Wittr.
 327. *urceolatum* Nordst. & Hirn.
 328. *varians* Wittr. & Lund.
 329. *vaucherii* (Le Cl.) Al. Br.; Wittr.
 330. *velatum* Hallas.
 331. *verrucosum* Hallas.
 332. *vesicatum* (Lyngbye) Wittr.
 333. *victoriense* G. S. West.
 334. *virceburgense* Hirn.
 335. *wabashense* Tiffany.
 336. *warmingianum* Wittr.
 337. *welwitschii* West.
 338. *wolleanum* Wittr.
 339. " f. *insigne* (Nordst.) Hirn.
 340. " var. *concinnum* Hirn.
 341. *wyliei* Tiffany.
 342. *zigzag* Cleve.
 343. " var. *robustum* West.
 344. *pyrulum* var. *amplius* W.R. Taylor.

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